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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/546,620	08/23/2005	Takashi Kariya	276730US90PCT	4465
22850	7590	01/02/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER DINH, TUAN T	
			ART UNIT 2841	PAPER NUMBER
			NOTIFICATION DATE 01/02/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
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## Office Action Summary

Application No.

10/546,620

Applicant(s)

KARIYA ET AL.

Examiner

Tuan T. Dinh

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 08/23/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-6, 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Asai et al. (U.S. Patent 6,534,723).

As to claim 1, 3-6, 16-17, Asai et al. discloses a multi-layer printed wiring board (80) as shown in figures 1-10 loaded with an electronic component (82) and having external terminals (62, 66), which is a BGA, wherein the external terminals are disposed on both faces (top and bottom surfaces of the PWB 80), the external terminal (66) on the opposite face is disposed off just below the external terminal on the one face, and is connected to a via hole (16) in stacked structure and the via hole connected to the external terminal (62, 66) is deflected from the via hole in an adjacent layer in terms of their center line, the multi-layer printed wiring board is formed by overlaying a single side or double side circuit board in which non-through holes formed in insulating material are filled with conductive material (18), and are connected to each other

through a conductive bump (solder bumps) formed on the conductive material (18) filled in the non-through holes, the via hole (16) formed in the mounting area of the components (82), and the metallic layer (40) having a heat radiation function (because the element 40 made of metal) formed in an adjacent portion.

3. Claims 2, 7-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Londa (U.S. Patent 5,963,430).

As to claim 2, Londa discloses a multi-layer printed wiring board (12, 22) loaded with an electronic component (36) and having external terminals, wherein a bored portion (18) for accommodating an electronic component (36) is provided in a mounting area, the external terminals (solder balls 70, 72, 90, 92) are disposed on both faces,

As to claims 7-15, Londa discloses a multi-layer printed wiring board (12, 22) as shown in figure 2 in which having a bored portion (18) to mount a electronic component (36) is wire-bonded (102a, 102b) from a bonding pad, a substrate being so constructed that a conductor circuit (pad or wiring form on or the surface of the substrate 12, 22) in is formed on a single side or double sides of insulation material thereof and the non-through hole leading to the conductor circuit is filled with conductive material, the conductor circuit just above the non-through hole (44) is used as the bonding pad having a rectangular shape, the conductive bump (solder bumps)/external terminals is formed on an opposite face to the conductor circuit of the bonding pad, the external terminal of the opposite face is disposed off just below the external terminal and pad of the one face.

**Conclusion**

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sakamoto et al. and Chakravorty disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gutierrez F. Diego can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Tuan Dinh  
December 21, 2007.



TUAN T. DINH  
PRIMARY EXAM

12/21/07